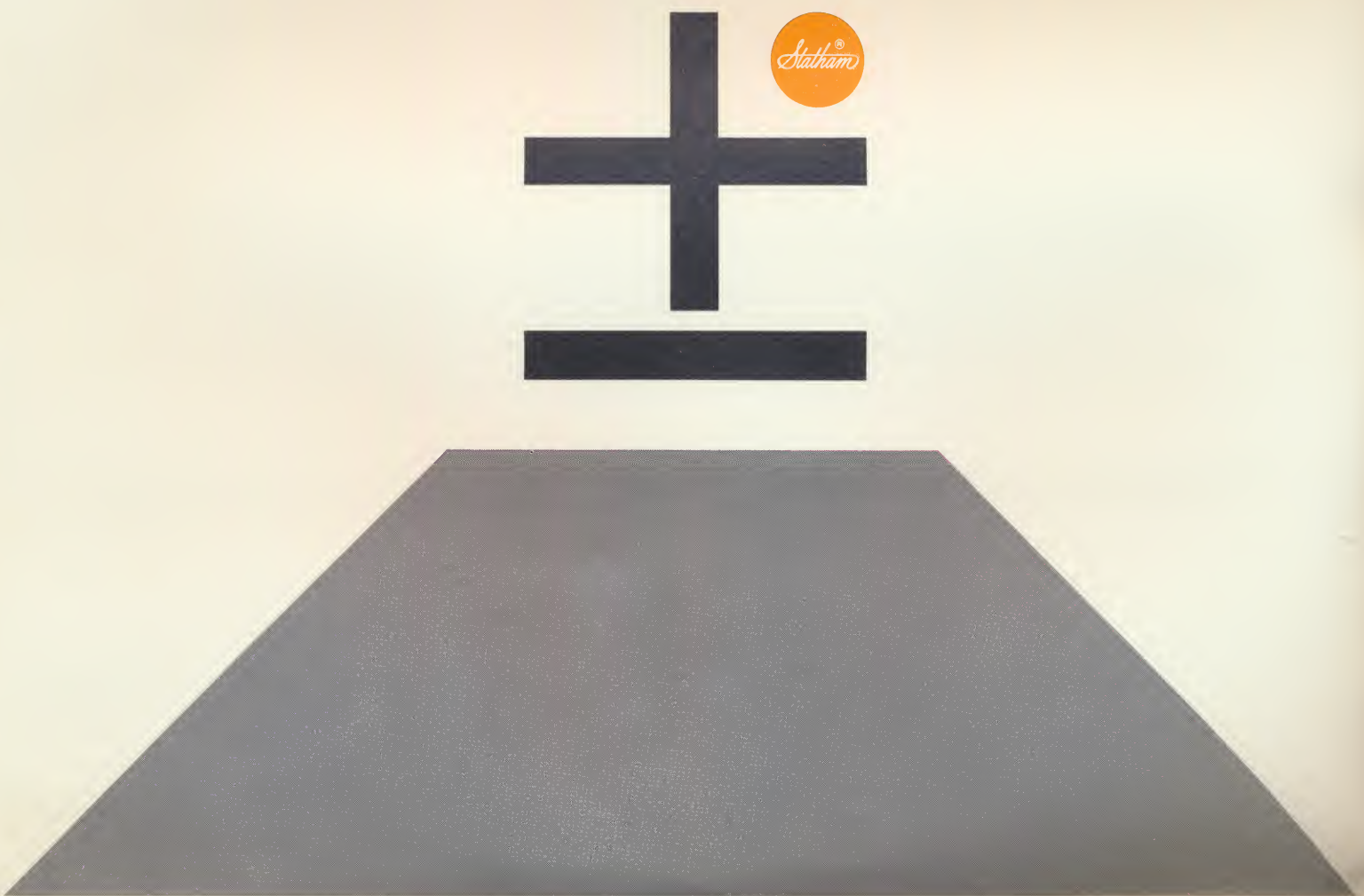
Temperature Test Chambers
and accessories

June 1967 Bulletin EP4

STATHAM INSTRUMENTS, INC. commercial products division

Statham's "SD" Series Temperature Test Chambers comprise a new generation of versatile, precision test instrumentatio
Eleven standard models plus a variety of electronic controllers and accessories are available to meet today's demands for hig
performance and economy test equipment. ▫ High-performance "SD" Chambers feature advanced solid-state electronic ci
cuitry and are capable of control accuracy to within ±.25°F. All units feature failsafe devices, simplified control panel
easy-lock doors, and are available with a variety of test trays and fixtures. ▫ The economy models — although built to the sam
stringent specifications as the higher priced units — utilize somewhat less sophisticated circuitry and controls. They are capabl
of ±1°F control accuracy under continuous operation. While generally used in low-cost production line testing, the econom
models subsequently may be modified for increased performance by replacing the electronic controllers. ▫ Optional control
lers are available for remote and automatic operation. These precision instruments permit versatile programmed operation a
low additional cost. ▫ Standard test chambers, controllers, and optional accessories are described on the enclosed pages
Please contact the Commercial Products Division, Statham Instruments, Inc., or the Statham sales representative in your area



precision control
high reliability
simplified operation

Statham's Temperature Test Chambers, Series SD, are the result of the Company's unparalleled experience in consistently manufacturing quality equipment. Each model reflects the latest mechanical and electronic features of the current state-of-the-art as well as superb craftsmanship.

Among the features of the high-performance models are:

Convenient set-point adjustment and temperature readout
A 24-lineal-inch calibrated set-point scale provides a high level of accuracy and resolution in automatic temperature selection. This is accomplished without the aid of a heat/cool mode switch.

Advanced solid-state control circuitry
Eliminates temperature cycling about the desired temperature control point. This results in extremely accurate chamber temperatures and minimal coolant consumption.

Radio-noise interference
Is reduced by an exclusive Statham circuit design which complies with MIL-I-26-600.

Automatic heating/cooling features
Facilitate the use of the test chamber without the inconvenience of a mode switch. As a result, a wide variety of programmed temperature ranges can be achieved readily through use of the optional Statham Rate-Time Programmer.

Failsafe feature
Prevents damage to test specimens and test chamber. The failsafe is visually adjustable and can be set to any desired temperature range between +100°F and +600°F.

High-gain, all solid-state controller
Senses and controls the test area temperature. The high-performance models use two resistance sensors to measure air temperature as it enters and leaves the test area. A control accuracy of ±.25°F or better is obtainable, while any thermal lag is quickly reduced by the unusually fast response capabilities of the sensors. Transient voltage protection is also provided for short-duration line surges.

Low thermal gradient losses and superior ducting design
Assure excellent temperature uniformity. Thermal gradients are exceptionally low: ±1.3°F at 300°F is a typical example.

Reliability and maintenance-free service
Are integral features attributable to the solid-state circuitry used. Consequently, contact devices and heater power relays are no longer a requisite.

High-pressure liquid CO_2
Is used as the standard coolant in Models SD12, 15, 24, 60, 80, 90, and 100.

Liquid nitrogen
Is the standard coolant in Models SD14, 30, and 70. Note that liquid CO_2 also can be used with these chambers to add to their versatility. This allows operation when test temperatures need be no lower than −100°F.

An external receptacle
On the rear apron of these chambers permits connection of remote controls or rate-time programmers.

Mechanical refrigeration
Is available on the Model SD11. This efficient approach to cooling permits fast temperature pull-down of test specimens. The SD11 offers economical operation over long periods of cycling and is engineered for convenient, trouble-free service.

temperature conversion

MODEL	FEATURES	Temperature Range °F °C	Test Area H x W x D inches mm.	Control Accuracy °F °C	Heating Rate °F/min. °C/min.	Cooling Rate °F/min. °C/min.	Coolant	Outside H x W x D inches mm.	Weight lbs. kg.
SD11	Mechanical refrigeration model incorporating all solid-state controller. Set-point dial calibrated in °F. (For °C calibration specify SD11-1.)	– 100 to +350 – 73.3 to +176.7	12 x 20 x 10 305 x 508 x 254	±1.0 ±.56	25 14	15 8	Mechanical Refrigeration	54¼ x 30½ x 24½ 1378 x 774 x 622	343 155
SD12	Standard high-temperature model. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify Model SD12-1.)	– 100 to +525 – 73.3 to +273.9	8¾ x 14½ x 10 222 x 369 x 254	±.25 ±.14	39 22	33 18	Liquid CO_2	19¼ x 17½ x 17½ 489 x 445 x 445	81.5 37
SD12-4	Same as standard Model SD12. Also has four-position push-button control. Calibrated in °F. (For °C calibration specify SD12-5.)								
SD14	Standard model for both high and low temperatures. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify Model SD14-1.)	– 300 to +400 –184.4 to +204.4	8¾ x 14½ x 9½ 222 x 369 x 242	±.25 ±.14	42 23	45 25	Liquid Nitrogen	19¼ x 17½ x 17½ 489 x 445 x 445	95 43
SD15	Standard high-temperature economy model. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify Model SD15-1.)	– 100 to +500 – 73.3 to +260	8¾ x 14½ x 10 222 x 369 x 254	±1.0 ±.56	30 17	35 19	Liquid CO_2	19¼ x 17½ x 17½ 489 x 445 x 445	75 34
SD24	Two-door chamber for high-density loading of electronic components. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify SD24-1.)	– 100 to +300 – 73.3 to +148.9	11⅛ x 19⅜ x 1½ 281 x 494 x 38	±.10 ±.056	5.5 3	4 2.2	Liquid CO_2	32 x 28 x 24 813 x 711 x 610	225 102
SD30	Standard low-temperature model. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify Model SD30-1.)	– 300 to +400 –184.4 to +204.4	7 x 10 x 9¾ 178 x 254 x 248	±.25 ±.14	103 57	88 49	Liquid Nitrogen	10¾ x 17½ x 18½ 273 x 444 x 470	38 17
SD60	Standard high-temperature model. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify Model SD60-1.)	– 100 to +525 – 73.3 to +273.9	7 x 10 x 10 178 x 254 x 254	±.25 ±.14	44 24	59 33	Liquid CO_2	10¾ x 17½ x 18½ 273 x 444 x 470	36 16
SD60-4	Same as standard Model SD60. Also has four-position push-button control. Calibrated in °F. (For °C calibration specify SD60-5.)								
SD70	Standard large test area low-temperature model. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify Model SD70-1.)	– 300 to +400 –184.4 to +204.4	11 x 20 x 13½ 279 x 508 x 343	±.25 ±.14	33 18	18 10	Liquid Nitrogen	15½ x 35 x 27 394 x 890 x 687	135 61
SD80	Standard high-temperature, large test area model. All solid-state controller. Set-point dial and deviation meter calibrated in °F. (For °C calibration specify SD80-1.)	– 100 to +525 – 73.3 to +273.9	11 x 20 x 14 279 x 508 x 356	±.25 ±.14	26 14	35 19	Liquid CO_2	15½ x 35 x 27 394 x 890 x 687	86 39
SD80-4	Same as standard Model SD80. Also has four-position push-button control. Calibrated in °F. (For °C calibration specify SD80-5.)								
SD90	Standard economy model. Features ± solid-state controller. Calibrated in °F. (For °C calibration specify Model SD90-1.)	– 100 to +500 – 73.3 to +260	7 x 10 x 10 178 x 254 x 254	±0.5 ±.28	55 31	35 19	Liquid CO_2	10¾ x 17½ x 18½ 273 x 444 x 470	25 11
SD100	Large test area economy model. Features ±1°F solid-state controller. Calibrated in °F. (For °C calibration specify SD100-1.)	– 100 to +500 – 73.3 to +260	11 x 20 x 14 279 x 508 x 356	±1.0 ±.56	25 14	25 14	Liquid CO_2	15½ x 35 x 27 394 x 890 x 687	59 27

The standard chambers operate with high-pressure CO_2. Low-pressure CO_2 operation can be provided upon request.

precision control
high reliability
simplified operation

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A 24-lineal-inch calibrated set-point scale provides a high level of accuracy and resolution in automatic temperature selec This is accomplished without the aid of a heat/cool mode switch.

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Failsafe feature
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High-gain, all solid-state controller
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Assure excellent temperature uniformity. Thermal gradients are exceptionally low: ±1.3°F at 300°F is a typical example.

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Liquid nitrogen
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Mechanical refrigeration
Is available on the Model SD11. This efficient approach to cooling permits fast temperature pull-down of test specimens. SD11 offers economical operation over long periods of cycling and is engineered for convenient, trouble-free service.

specifications

Rack Mounting: Models SD12, 14, 15, 30, 60, and 90 are available for rack mounting. To order this option, add "R" to the basic model number, e.g., "SD30R." The outside measurements of the rack-mounted SD30, 60, and 90 are 10¾" H x 17½" W x 18½" D. Measurements of the rack-mounted SD12, 14, and 15 are 19½" H x 17½" W x 20½" D.
Power: Standard models require 115 V AC 1-phase, 50-60 Hz power. To order 230 V ±10V AC, 1-phase, 50-60 Hz operation, add "900" to the basic model number, e.g.,"SD30-900."
Internal Chamber: Stainless steel.
Insulation: Models SD11, 14, 30, and 70 use low-density foam; all other models use glass fiber. Transite or Synthane is used structurally.
Color Scheme: Cabinet / grey and white; door / blue-green.
Remote Control: High-performance Models (SD12, 14, 24, 30, 60, 70, and 80) feature a remote control outlet located on the rear apron.
Coolant Note: (CO_2 Models) High-pressure CO_2 (900 psi) is standard. Low-pressure CO_2 (300 psi) operation can be provided upon request. Most models can be supplied for use with liquid nitrogen in conjunction with CO_2 for a faster cooling rate.
Coolant Note: (LN_2 Models) Liquid nitrogen pressure of 10 to 25 psi is standard. Most models can be supplied also for use with liquid CO_2 (high or low pressure).
Modifications: Variations of mechanical configurations and standard specifications to meet special applications are also available. Statham Instruments, Inc., will be pleased to receive and quote on your outline requirements for a specific modification.

Statham®

TEST CHAMBERS

Warranty: Statham Instruments, Inc., warrants all products of its manufacture to be free from defects in workmanship and material under normal use and service. In the case that any of our products is believed to be defective, if the same is returned within twelve months after date of shipment by the Company, with transportation to the Company prepaid, and is found by the Company's inspection to be defective in workmanship or material, it will be repaired or replaced free of charge and shipped, transportation prepaid, to any point in the United States. If inspection by the Company of any such products does not disclose any defect in workmanship or material, the Company's regular charges will apply. All statutory or implied warranties, except of title, are negated and excluded. The foregoing provisions are in lieu of all other warranties, guarantees, obligations or liabilities on the part of the Company. The Company shall not be liable for and the Purchaser assumes and will indemnify and save harmless the Company in respect to any loss or damage that may arise through the use by the Purchaser, or others, of any of the Company's products. The time under this warranty shall be limited to three months from date of shipment on repaired equipment, material, and supplies to the original buyer.

Please write or call the factory for authorization, prior to returning equipment. Freight damages will require the consignee to have the carrier inspect the damage, prior to returning. Damaged material, normally, is returned on a "dead-head" waybill, which has no charge to either the consignee or Statham Instruments, Inc. However, if the carrier refuses to return material in this fashion, please return the unit collect, and we will include this charge with our repair cost.

Statham High-Performance Temperature Test Chambers

Series SD12, SD14, SD24, SD30, SD60, SD70, SD80

Solid-State Control Modules

The availability of various types of control modules makes the Statham line of high-performance chambers equally adaptable to both conventional and special testing programs. These solid-state electronic units of advanced design are available with a standard set-point dial, push button, or a combination of push button and dial.

Standard Control Panel

The standard control panel consists of a 24-lineal-inch set-point dial and a deviation meter calibrated in one degree increments. The faceplate of the set-point dial is designed for quick visual reference. The deviation meter reads out any discrepancy between the inside chamber temperature and the set-point by measuring the balance condition of the resistance bridge circuitry. This method of measurement offers greater accuracy and meter readability than is attainable by conventional methods.

Push-Button Control

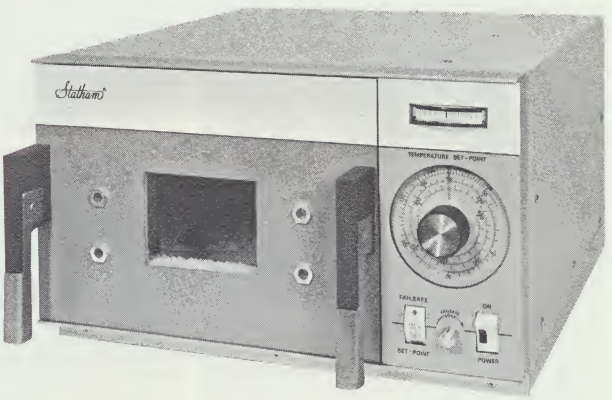
Statham's push-button temperature control is a convenient method for obtaining frequently repeated temperature settings with speed and accuracy. The standard module contains four buttons — however, modules with up to 16 buttons may be ordered. Temperatures may be preset at any desired point over the chamber's entire range. This flexibility is provided by potentiometers which are easily accessible and are adjustable over the entire temperature range. Push-button control provides convenient temperature repeatability, while the deviation meter indicates the difference between the temperature inside the chamber and the selected temperature.

Combination Dial/Push-Button Control

The combination control module blends the features and advantages of both the panels described above. For versatility and convenience, the combination arrangement incorporates the 24-lineal-inch set-point dial, up to four temperature selection push buttons, and a temperature deviation meter. One button allows use of the dial. The other three may be preset at any temperature over the chamber's entire range.

Special Modules

Optional control modules incorporating custom-designed configurations and orientation of dials, buttons and switches are available on special order.



SD30

SD12

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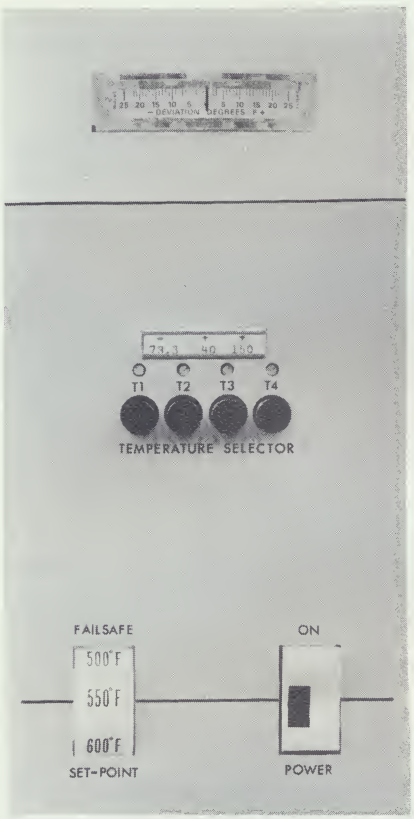
Statham High-Performance Temperature Test Chambers & Controllers

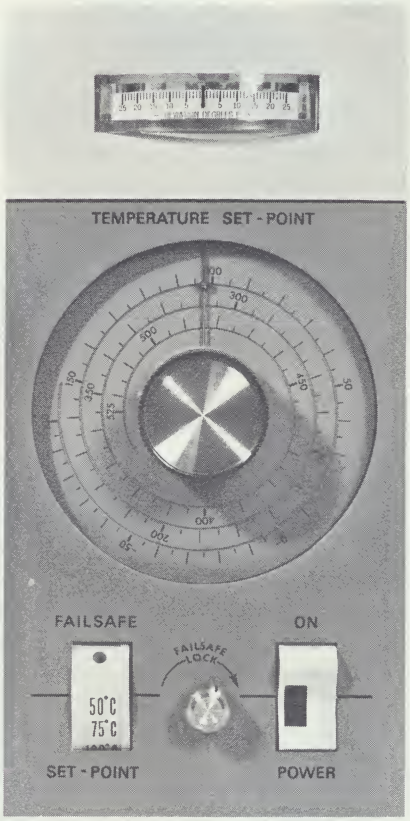
Statham®

TEST CHAMBERS

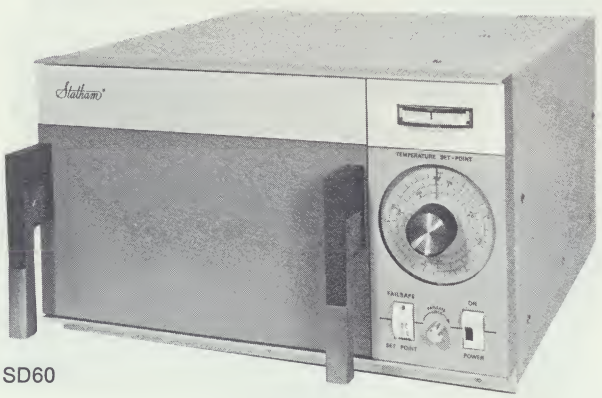


SD60–1

SD60-5



SD60-6



SD60

SD80

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Statham Economy Temperature Test Chamber

TEST CHAMBERS

SD15, SD90, and SD100 / ±1°F Control Accuracy

Statham's standard line of temperature test chambers includes three "economy" models; the SD15, 90, and 100. These rugged units are especially suited for research and production-line test installations. A solid-state controller is used to maintain an accuracy of ±1°F over a temperature range of −100 to +500°F. (The SD90 maintains ±.5°F control accuracy.)

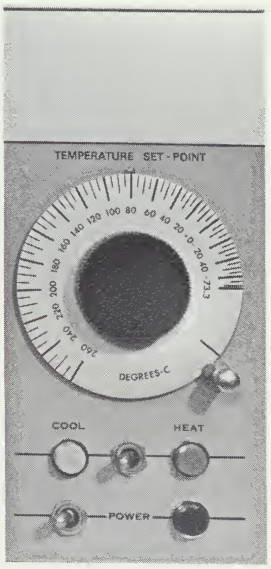
Control accuracy is achieved through the use of sensors with an extremely fast response capability to reduce thermal lag. An exclusive Statham circuit design, employing a silicon-controlled rectifier provides ±1°F control accuracy, or closer.

All economy models feature an adjustable failsafe control located on the rear panel of the chamber. This device is actuated by a temperature rise ranging from ambient to 525°F.

Temperature Selection and Readout

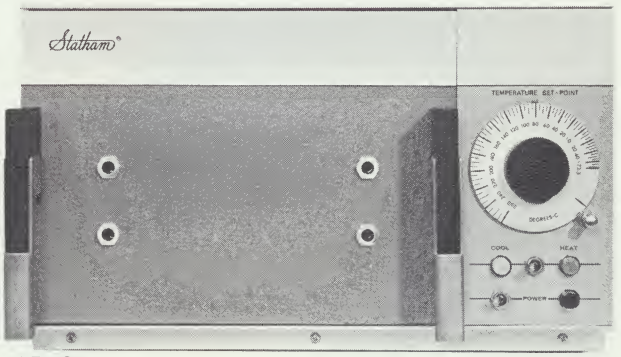
The control panels on the Models SD15, 90, and 100 feature a calibrated ¾-turn dial with six inches of set-point scale for temperature selection and readout. Transitional temperatures can be located at any time by adjusting the dial to correspond with the existing temperatures in the chamber. The "Heat" and "Cool" indicator lamps provide On/Off flashing at the control point.

The modular construction of the SD15, 90, and 100 control panels allows simple modification for upgrading the systems to ±.25°F control accuracy by substituting an appropriate precision controller and an additional sensor.

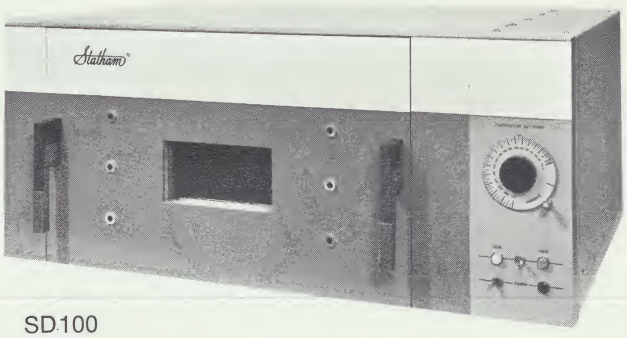


SD90-1 Controller

SD15



SD90



SD100

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Statham "TC" Series Temperature Test Chambers

Designed for accuracy and long service

The Statham "TC" Series represents industry's most widely accepted line of temperature test chambers. Applications include installation in production facilities of semiconductor and electronic component plants, research laboratories and pilot production facilities. "TC" models are available ranging from economy units with temperature control accuracy of ±2°F to high-performance systems with accuracies of ± ¼ °F. Test temperature ranges are from −100 to +750°F.

SPECIFICATIONS — TC High - Performance Models

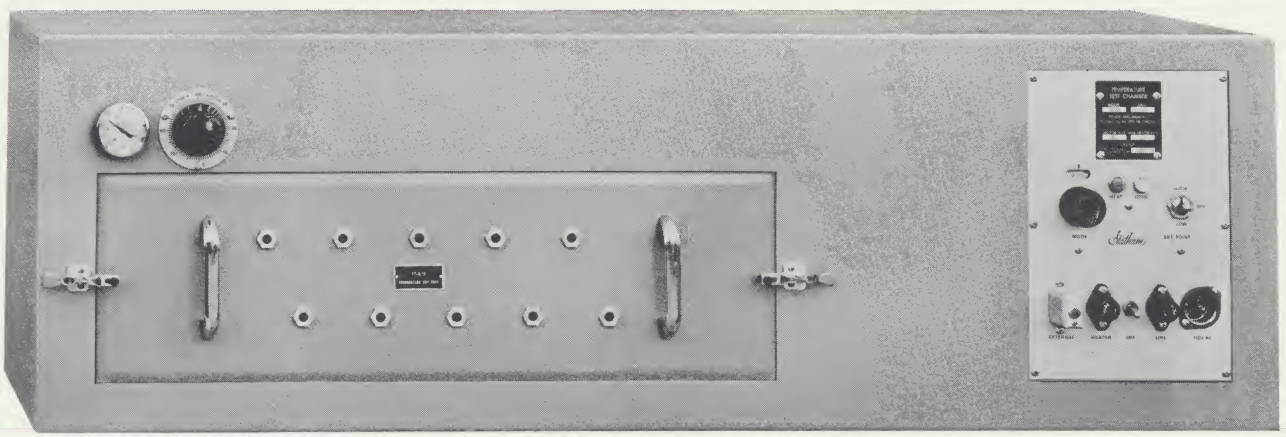
	Model No.	Temperature Range (°F.)	Internal Test Area	Heating Rate (°F/Min.)	Cooling Rate (°F/Min.)	CO_2 Coolant	Weight (lbs.)	Outside H x W x D (inches)
Standard	TC-5A	−75° to +600°	7″ high, 17″ wide, 7½″ deep	36°	4.5°	Solid	78	16½ x 48 x 12
	TC-5B	−100° to +600°			54°	Liquid & Solid	83	
Wide Door	TC-9A	−75° to +600°	7″ high, 26″ wide, 7½″ deep	36°	4.5°	Solid*	78	16½ x 48 x 12
	TC-9B	−100° to +600°			54°	Liquid & Solid*	83	
High Temperature	TC-15A	−75° to +750°	7″ high, 17″ wide, 7½″ deep	36°	4.5°	Solid	83	16½ x 48 x 12
	TC-15B	−100° to +750°			54°	Liquid & Solid	88	

*Dry ice consumes part of test area.

SPECIFICATIONS — TC Economy Models

	Model No.	Temperature Range (°F.)	Internal Test Area	Heating Rate (°F/Min.)	Cooling Rate (°F/Min.)	CO_2 Coolant	Weight (lbs.)	Outside H x W x D (inches)
Standard	TC-2A	−75° to +350°	7″ high, 17″ wide, 7½″ deep	7°	9.6°	Solid	65	16½ x 48 x 12
	TC-2B	−100° to +350°			16°	Liquid & Solid	68	
Wide Door	TC-6A	−75° to +350°	7″ high, 26″ wide, 7½″ deep	7°	4.5°	Solid*	65	16½ x 48 x 12
	TC-6B	−100° to +350°			54°	Liquid	68	
High Temperature	TC-4A	−75° to +600°	7″ high, 17″ wide, 7½″ deep	20°	9.6°	Solid	66	16½ x 48 x 12
	TC-4B	−100° to +600°			16°	Liquid & Solid	69	
Wide Door	TC-8A	−75° to +600°	7″ high, 26″ wide, 7½″ deep	20°	4.5°	Solid*	66	16½ x 48 x 12
	TC-8B	−100° to +600°			54°	Liquid	69	

*Dry ice consumes part of test area.



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MAY 1967 20M

Statham SD11
Temperature Test Chamber

Mechanical Refrigeration
Solid-State Controller
Adjustable Failsafe Control

Statham's Model SD11 Temperature Test Chamber is designed for low-cost, long-term testing in research and production-line applications.

The SD11 is refrigerated mechanically by ½- and ¾-horsepower cascade compressor systems and operates at less cost per cubic inch of test volume than other chambers of its type. Optionally, the SD11 may be equipped with a liquid CO_2 valve for faster pull-down of temperature.

A solid-state controller maintains a control accuracy of ±1°F over a temperature range of −100 to +350°F, sustaining the set-point temperature by automatic regulation of the amount of refrigeration or heat delivered to the test area.

The SD11 features an adjustable failsafe control which is actuated by a temperature rise ranging from ambient to 350°F. As on all Statham chambers, this device is located on the rear panel of the chamber.

The SD11 Temperature Test Chamber may be modified or adapted to meet your specific requirements by the inclusion of such items as Statham's Cycle Time Controller and/or data recording systems.

Optional push-button control capability is available for convenient return to frequently used temperature settings.

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Statham SD24
Temperature Test Chamber

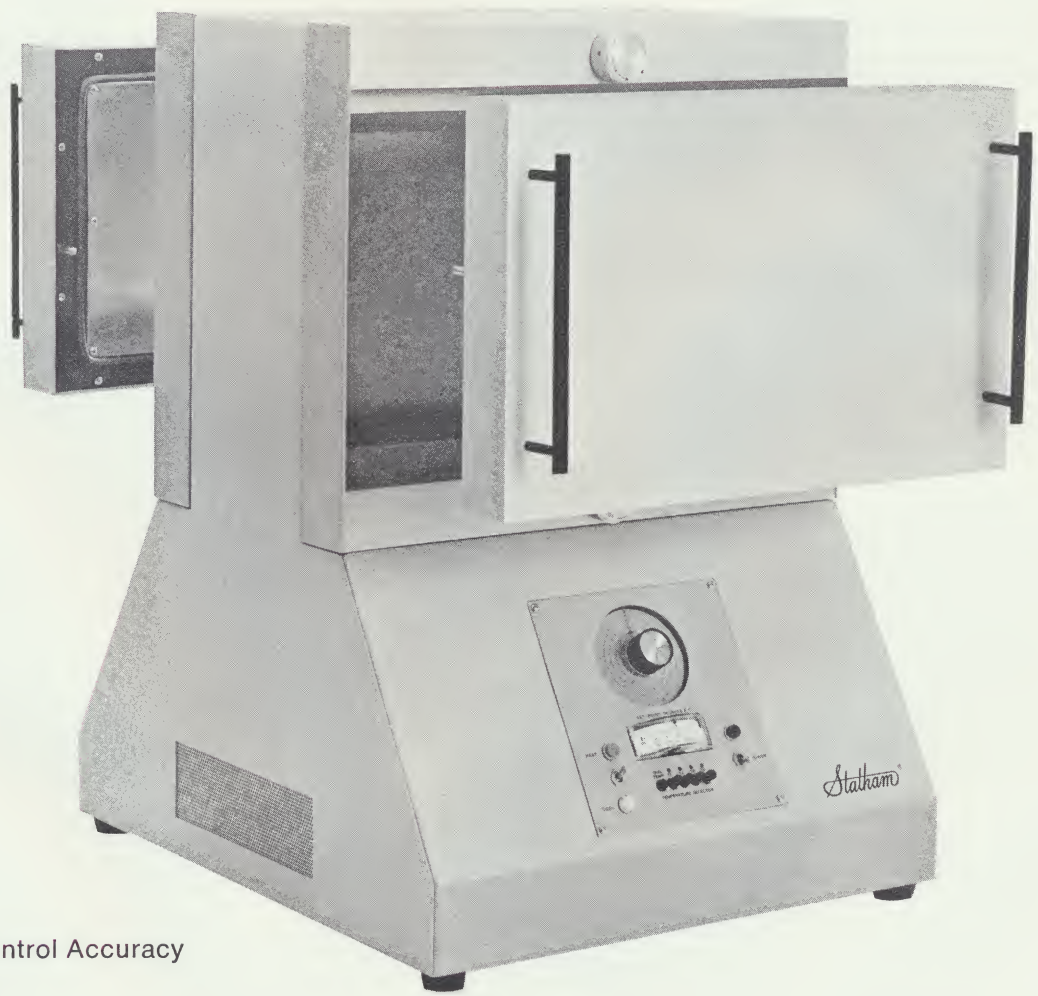
Featuring two-door high-density loading

TEST CHAMBERS

The Statham SD24 is designed for programs requiring the convenience of high-density loading, such as production testing of miniature electronic components.

A high-gain, all solid-state controller senses and controls both test areas to within ±0.1°F. Radio frequency interference is minimized by the same control technique features in the SD12, SD60, and SD80 Test Chambers. At the same time, high levels of accuracy and resolution are achieved by a 24-lineal-inch calibrated set-point scale and deviation meter. For high performance and convenience, high-pressure CO_2 is used as the coolant. Exceptionally low thermal gradients are attained by means of counterflow techniques.

Standard doors are available to accommodate a variety of components such as semiconductor devices, crystals, and micromodules. Push button temperature selection panel (as shown) is optional.



±0.1°F Control Accuracy

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MAY 1967 20M

Cycle Time Controllers

For Statham Temperature Test Chambers

Statham® ± TEST CHAMBERS

Statham Cycle Time Controllers are precision instruments designed to permit the selection of either two, three, or four operational test phases, each with a different temperature and duration. Total cycling time is adjustable by means of an elapsed time controller.

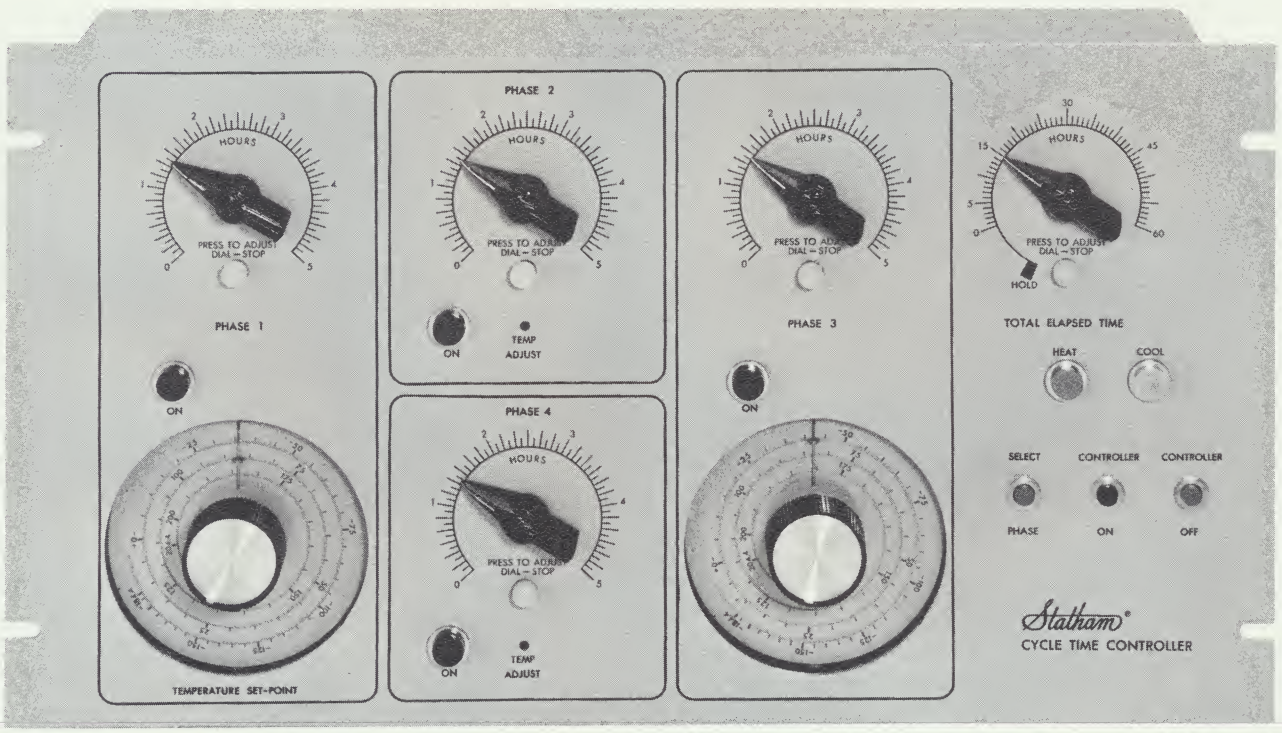
Model CTC-2-1
is a two-phase controller that can be sequenced from cold to hot or vice-versa. Each phase has its own 24-lineal-inch set-point dial and timing unit.

Models CTC-3-1, CTC-3-2
are three-phase controllers that permit selected temperatures to be sequenced in any order; i.e., hot-cold-hot, cold-hot-ambient, etc. Each phase has its own 24-lineal-inch set-point dial and timing unit.

Models CTC-3-3, CTC-3-4
are four-phase controllers that can be sequenced in any hot-ambient-cold-ambient order. Phases 1 and 3 have their own 24-lineal-inch set-point dial. Phases 2 and 4 are for ambient temperatures and contain set-point potentiometers, which are adjustable over the entire temperature range.

Any phase can be manually overriden. The total automatic, unattended program maximum is 72 hours with each phase having maximum time of six hours. For complete and automatic phasing, the four phases comprise one automatic cycle. The program is selected for the desired cold-to-hot, hot-to-cold, or other desired temperature variations, and the required number of cycles to be programmed. The system then runs through Phase One, switches automatically to Phase Two, and continues through Phases Three and Four. After repeating the programmed number of cycles, the Cycle Time Controller stops automatically.

At any point of any phase, if desired, a touch of the button advances the test to the next phase, without delay for completion of the previous step.



STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

MAY 1967 20M

Statham TFS
Temperature Failsafe Controllers

Reliable Protection at Low Cost

The Statham TFS Temperature Failsafe Controllers are precision instruments utilizing dependable solid-state circuitry. Three basic models are available which have been designed so that components with the highest known failure rates will determine the failsafe condition of the controller. For example, the opening of a sensing element will cause main power cutoff to the test chamber.

The Temperature Failsafe Controllers can be adapted for use with most commercial test chambers.

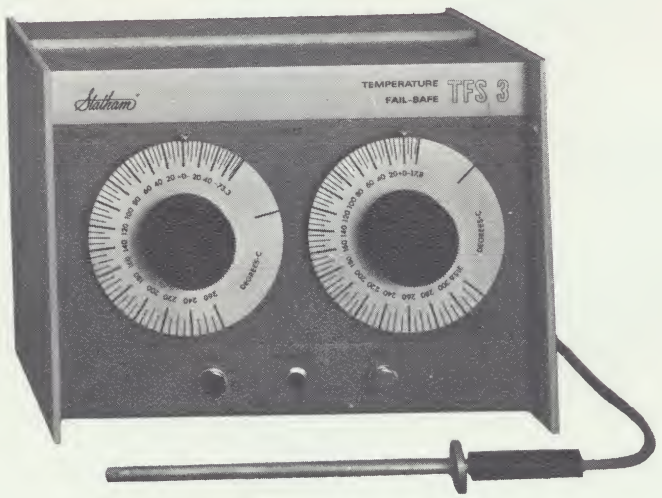
Failsafe temperature selection is made with a ¾-turn dial with a six-inch set-point scale. If the chamber reaches the pre-set temperature, all power to the chamber is automatically cut off. The power will remain off until the controller is reset.

Three basic TFS models are available:

TFS-1 for high-temperature failsafe only
TFS-2 for high- and low-temperature failsafe
TFS-3 for high- and low-temperature failsafe with liquid CO_2 cutoff valve

SPECIFICATIONS

Temperature Ranges:	−100°F to +600°F −300°F to +400°F (add "A" to model number)
Sensing Element:	A separate removable ruggedized probe can be supplied; or a permanently mounted sensing element can be installed at the factory
Controls:	Low side failsafe range: −100 to +100°F High side failsafe range: +85 to +600°F
Power Requirements:	115 V AC — all chamber power derived from failsafe controller
Maximum Current:	15 amperes — higher current ratings available upon request
Weight:	9 pounds
Accessories:	Six-foot cable with sensing element Six-foot power cable
Mounting:	Bench Rack mounting available upon request



STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

JUNE 1967 20M

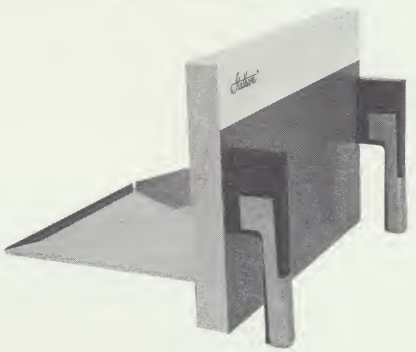
Test Trays

for use with Statham "SD" Series Temperature Test Chambers

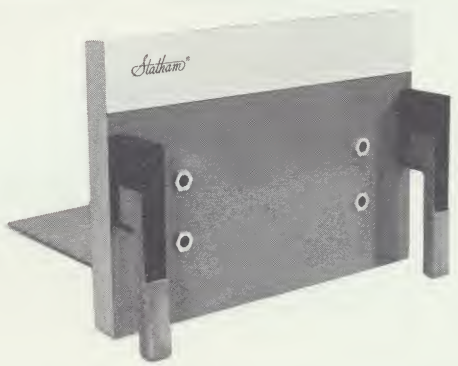
TEST CHAMBERS

Three basic types of Statham Test Trays are available from stock — Blank, Port, and Window. With the exception of Test Chamber Models SD11 and SD24, Statham SD Series Test Trays are provided with an attached base shelf (as illustrated). All models feature durable stainless steel interiors and quality construction throughout. Loading is facilitated by redesigned "quick-lock" handles.

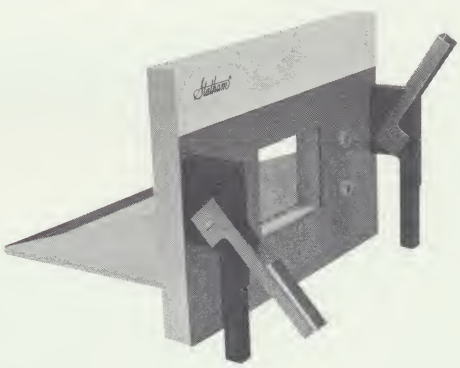
TYPE	MODEL	DESCRIPTION	BASIC CHAMBER
Blank	SD11/B	Blank front, hinged	SD11
	SD12/B	Blank front	SD12
	SD14/B	Blank front	SD14
	SD24/B	Blank front	SD24
	SD30/B	Blank front	SD30
	SD60/B	Blank front	SD60, SD90
	SD70/B	Blank front	SD70
	SD80/B	Blank front	SD80, SD100



Port	SD11/P	4 ports, ⅜" ID, hinged	SD11
	SD12/P	4 ports, ⅜" ID	SD12
	SD14/P	4 ports, ⅜" ID	SD14
	SD30/P	4 ports, ⅜" ID	SD30
	SD60/P	4 ports, ⅜" ID	SD60, SD90
	SD70/P	5 ports, ⅜" ID	SD70
	SD80/P	5 ports, ⅜" ID	SD80, SD100



Window	SD11/G	10" x 10" window (hinged)	SD11
	SD12/G	3½" x 7" window & 4 ports, ⅜" ID	SD12
	SD60/G	3½" x 4½" window & 4 ports, ⅜" ID	SD60, SD90
	SD80/G	3½" x 7" window & 4 ports, ⅜" ID	SD80, SD100



STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

MAY 1967 20M

Test Fixtures

For use with Statham "SD" Series Temperature Test Chambers

Statham test fixtures are custom-designed to permit rapid and continuous testing of various electronic components and micromodules. The fixtures also provide high unit capacity, quick loading, and ease of accessibility.

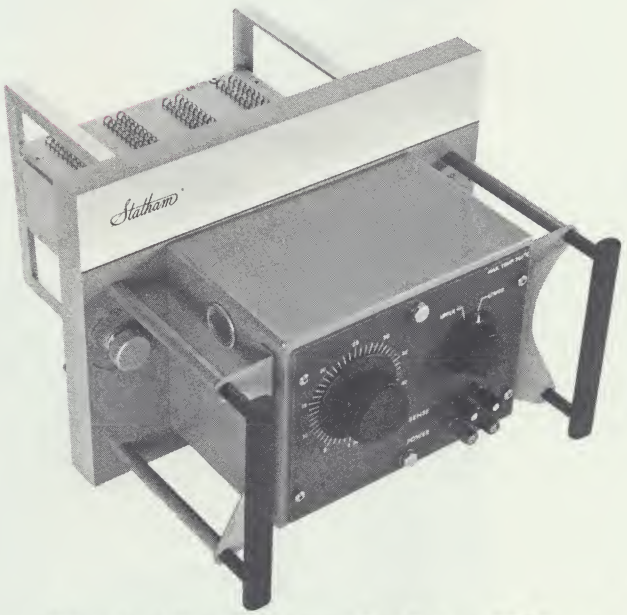
Statham test fixtures may be supplied with single, dual, or Kelvin wiring for signal readouts isolated from the power input and for selective individual switching. All fixtures are designed to ensure low electrical leakage rates and low thermal gradients.

In addition, standard "off-the-shelf" models are available for testing transistors and diodes. Statham's Test Fixture, Model TTF-6/TR three-lead transistor fixture has all elements floating and singly wired; Fixture Model CTF-6/R two-lead component fixtures have one side common and singly wired. Both are available for Models SD30, 60, and 90.

The only design limitations on Statham test fixtures are physical dimensions. Various configurations for special requirements are available. Outlines of your particular needs are invited.

Transistor Test Fixture, TTF Series

Integrated Circuit Test Fixture



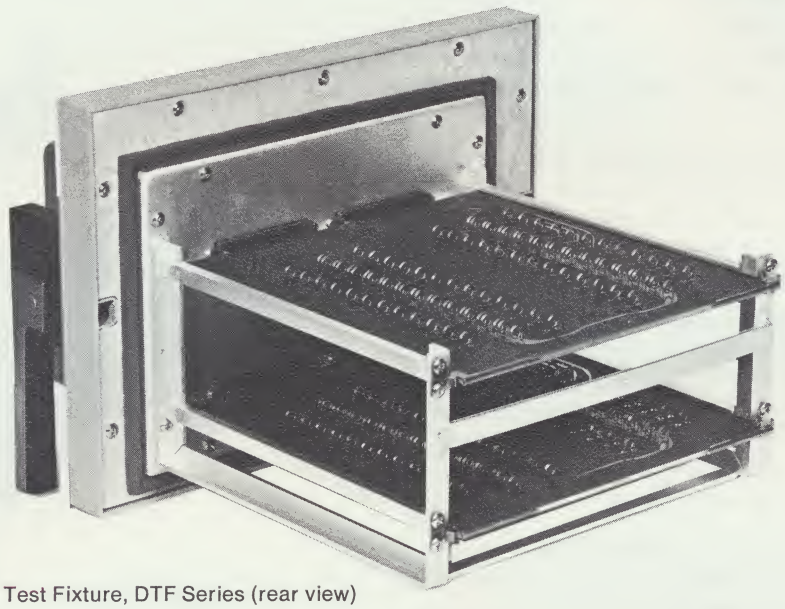
Kelvin Hard-Wired Component Test Fixture, CTF Series

STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

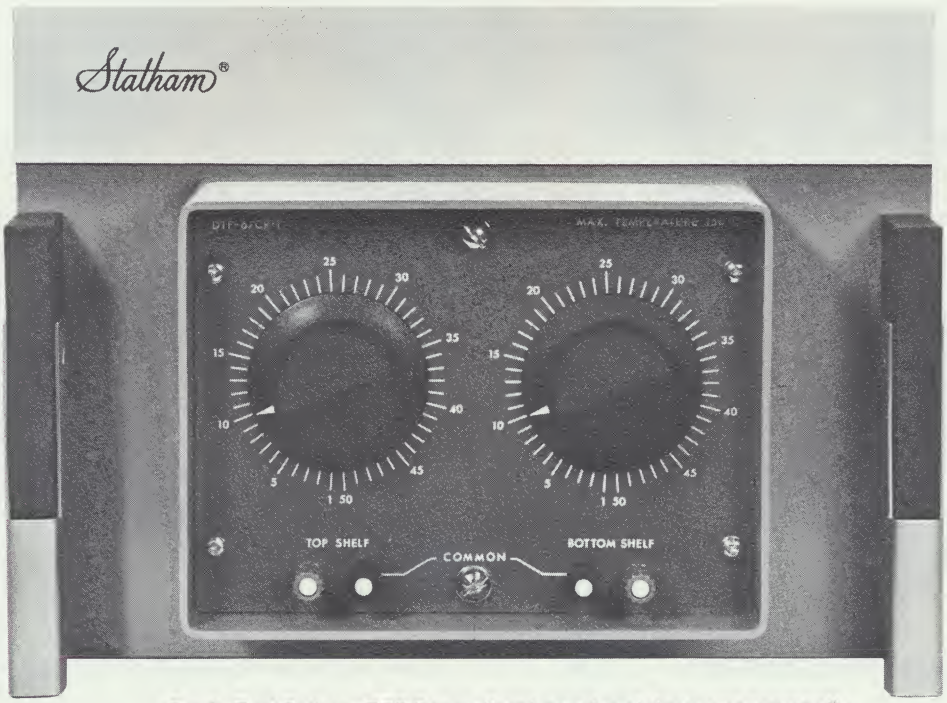
Test Fixtures

For use with Statham "SD" Series Temperature Test Chambers

TEST CHAMBERS



Diode Test Fixture, DTF Series (rear view)



Diode Test Fixture, DTF Series (front panel switching arrangement)

STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

JUNE 1967 20M

Test Fixtures

For use with Statham "SD" Series Temperature Test Chambers

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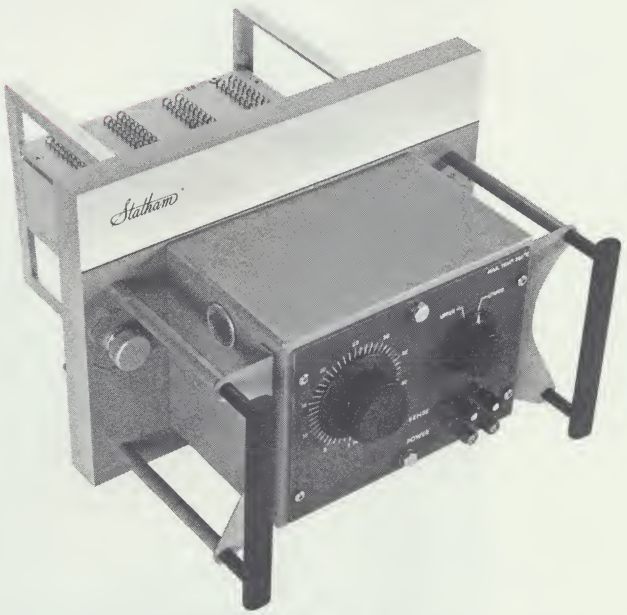
Transistor Test Fixture, TTF Series

Integrated Circuit Test Fixture

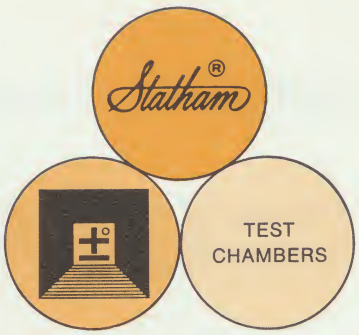


Kelvin Hard-Wired Component Test Fixture, CTF Series

STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

RP11-0 Rate-Time Programmer

For use with Statham "SD" Series Temperature Test Chambers

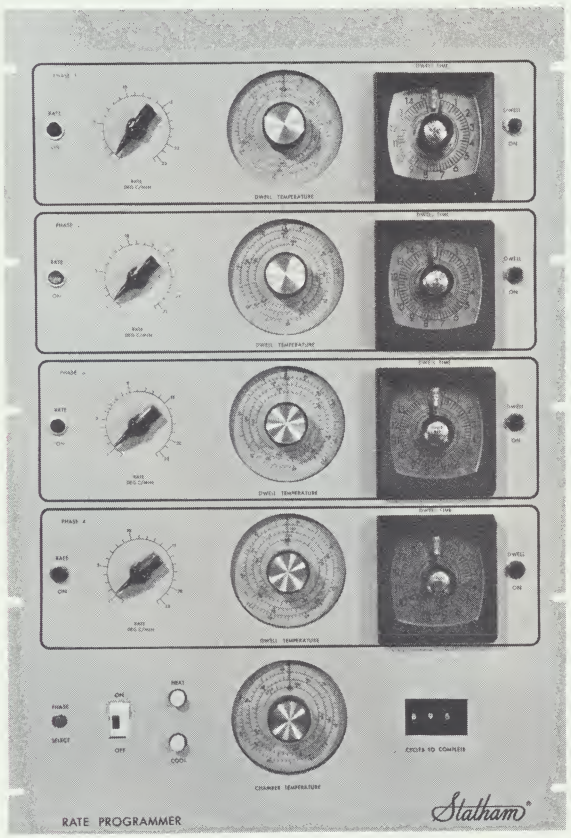


Accuracy
Dependability
Convenient Operation

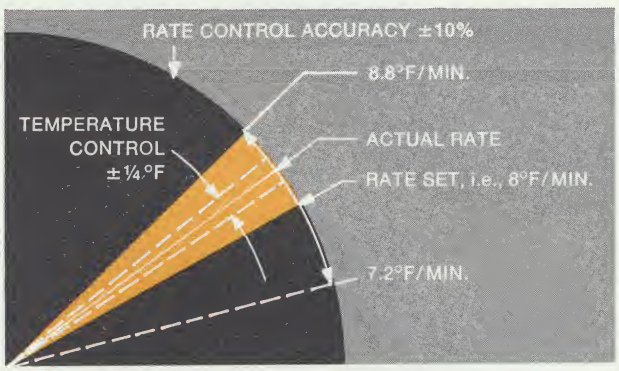
THE RP11-0 is a precision electronic instrument that can control test temperatures to within ±.25°F when used in conjunction with Statham Test Chambers. Solid-state circuitry eliminates mechanical cams, thereby assuring better than human repeatable accuracy over a long and dependable service life. The unit is simple to program, yet a manual overriding option is included for introducing manual commands at any desired point. The automatic electronic sequencing operation eliminates the need for constant attention to prolonged test procedures by laboratory technicians.

A visual counter permits selection from one to 999 cycles, with automatic shut-off at completion of the required number. Each cycle is divided into four complete and independent phases, and each phase is adjustable for dwell times ranging from 30 minutes to 60 hours. The change rates can be varied from 1°F to 40°F/minute.

The desired rate of temperature change, the dwell time of each phase, and the temperature of that dwell time are set on visual dials which control the function of the test chamber. The "present" phase is indicated by a signal light and all data — including the actual chamber temperature and number of cycles remaining — are visible at a glance. An "advance phase" button and "manual temperature selection" dial complete the control panel. With this flexible instrumentation, the accuracy of temperature parameters is limited only by the capabilities of the chamber.



The following graphs illustrate a typical rate program as applied to Statham Test Chambers SD12, SD60 and SD80.

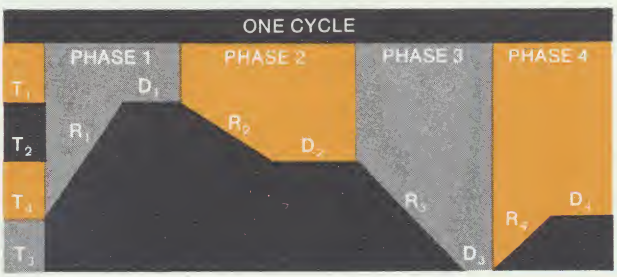


R1, R2, R3, & R4 RATE TIMES INDEPENDENTLY ADJUSTABLE 1°F/MIN. TO 40°F/MIN.

D1, D2, D3, & D4 DWELL TIMES INDEPENDENTLY ADJUSTABLE. SEE CONTROL PANEL PHOTO.

T1, T2, T3, & T4 TEMPERATURES INDEPENDENTLY ADJUSTABLE OVER COMPLETE CHAMBER RANGE.

TEMPERATURE PROGRAMMING WILL CONTINUE PHASE 1, 2, 3, 4, 1, 2, 3, ETC., UNTIL CYCLE COUNTER READS ZERO, AT WHICH TIME CHAMBER IS TURNED OFF.



STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

RP11-0 Rate-Time Programmer

For use with Statham "SD" Series Temperature Test Chambers

SPECIFICATIONS

Dwell Time:	Minimum — 30 minutes • Maximum — 60 hours
Rate Control Accuracy:	±10% (of rate scale indication)
Rate Control Adjustment:	Variable from 1°F/min. to 40°F/min. Setability ±2%
Temperature Control Accuracy:	±.25°F (limited by the capability of the chamber)
Cycling Control:	Variable from 1 to 999 complete cycles with automatic turnoff at completion
Power Requirements:	115 volts AC derived from chamber interconnecting cable

Dwell time clocks on the RP11-0 are available in the following ranges and have a minimum time setting of 2% full scale:

5 seconds	5 minutes	5 hours
10 seconds	10 minutes	10 hours
30 seconds	30 minutes	30 hours
60 seconds	60 minutes	60 hours
150 seconds	150 minutes	120 hours

Another manual control permits transient raising or lowering of the temperature without cancelling the programmed sequence. For example, a temperature increase to 500°F may be superimposed on a programmed 400° dwell temperature.

The versatility of the Statham RP11-0 Rate-Time Programmer allows programming of four phases.

STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

JUNE 1967 20M

Temperature Conversion Chart

CONVERSION METHOD $°F = 9/5°C + 32°$
$°C = 5/9\ (°F - 32°)$

°C	°F	°C	°F	°C	°F	°C	°F
−100	−148	+60	+140	+225	+437	+385	+725
−95	−139	+65	+149	+230	+446	+390	+734
−90	−130	+70	+158	+235	+455	+395	+743
−85	−121	+75	+167	+240	+464	+400	+752
−80	−112	+80	+176	+245	+473	+405	+761
−75	−103	+85	+185	+250	+482	+410	+770
−73	−100	+90	+194	+255	+491	+415	+779
−70	−94	+95	+203	+260	+500	+420	+788
−65	−85	+100	+212	+265	+509	+425	+797
−60	−76	+105	+221	+270	+518	+430	+806
−55	−67	+110	+230	+272	+525	+435	+815
−50	−58	+115	+239	+275	+527	+440	+824
−45	−49	+120	+248	+280	+536	+445	+833
−40	−40	+125	+257	+285	+545	+450	+842
−35	−31	+130	+266	+290	+554	+455	+851
−30	−22	+135	+275	+295	+563	+460	+860
−25	−13	+140	+284	+300	+572	+465	+869
−20	−4	+145	+293	+305	+581	+470	+878
−15	+5	+150	+302	+310	+590	+475	+887
−10	+14	+155	+311	+315	+599	+480	+896
−5	+23	+160	+320	+320	+608	+485	+905
0	+32	+165	+329	+325	+617	+490	+914
+5	+41	+170	+338	+330	+626	+495	+923
+10	+50	+175	+347	+335	+635	+500	+932
+15	+59	+180	+356	+340	+644	+505	+941
+20	+68	+185	+365	+345	+653	+510	+950
+25	+77	+190	+374	+350	+662	+515	+959
+30	+86	+195	+383	+355	+671	+520	+968
+35	+95	+200	+392	+360	+680	+525	+977
+40	+104	+205	+401	+365	+689	+530	+986
+45	+113	+210	+410	+370	+698	+535	+995
+50	+122	+215	+419	+375	+707		
+55	+131	+220	+428	+380	+716		

STATHAM INSTRUMENTS, INC., COMMERCIAL PRODUCTS DIVISION / 12401 WEST OLYMPIC BLVD. / LOS ANGELES, CALIF. 90064 / (213) 272-0371

MAY 1967 20M

COMMERCIAL PRODUCTS DIVISION

Temperature Test Chambers

PRICE LIST

Effective August 1, 1967

TERMS: 30 days net, F.O.B. Oxnard, Calif. Prices are for single unit orders and are based on standard catalog specifications. Refer to factory for prices on modifications. Prices subject to change without notice.

Statham®

TEST CHAMBERS

SD SERIES

PRECISION MODELS	PRICE WITH BLANK TRAY	TEMPERATURE RANGE/°F
SD30	$1065	−300 to +400
SD30-1	1065	−300 to +400
SD30-4	1125	−300 to +400
SD30-5	1125	−300 to +400
SD30-6	1025	−300 to +400
SD30-7	1025	−300 to +400
SD60	815	−100 to +525
SD60-1	815	−100 to +525
SD60-4	875	−100 to +525
SD60-5	875	−100 to +525
SD60-6	775	−100 to +525
SD60-7	775	−100 to +525
SD70	1430	−300 to +400
SD70-1	1430	−300 to +400
SD80	1275	−100 to +525
SD80-1	1275	−100 to +525
SD80-4	1335	−100 to +525
SD80-5	1335	−100 to +525
SD80-6	1235	−100 to +525
SD80-7	1235	−100 to +525
SD12	1030	−100 to +525
SD12-1	1030	−100 to +525
SD12-4	1090	−100 to +525
SD12-5	1090	−100 to +525
SD14	1265	−300 to +400
SD14-1	1265	−300 to +400

(The above models feature a control accuracy of ±0.25°F with a solid-state controller.)

SD24	1700	−100 to +300

(The above model features a control accuracy of ±0.1°F with a solid-state controller.)

MECHANICAL REFRIGERATION

SD11	2080	−100 to +350
SD11-1	2080	−100 to +350

(The above models feature a control accuracy of ±1°F with a solid-state controller.)

TC SERIES

STANDARD MODELS	PRICE WITH BLANK TRAY	TEMPERATURE RANGE/°F
TC-2A	$ 570	−75 to +350
TC-2B	695	−100 to +350
TC-4A	755	−75 to +600
TC-4B	770	−100 to +600
TC-6A	725	−75 to +350
TC-6B	815	−100 to +350
TC-8A	890	−75 to +600
TC-8B	975	−100 to +600

(The above models feature a control accuracy of ±2°F with a thermostatic controller.)

PRECISION MODELS	PRICE WITH BLANK TRAY	TEMPERATURE RANGE/°F
TC-5A	$1090	−75 to +600
TC-5B	1170	−100 to +600
TC-9A	1195	−75 to +600
TC-9B	1270	−100 to +600
TC-15A	1390	−75 to +750
TC-15B	1465	−100 to +750

(The above models feature a control accuracy of ±0.25°F with an electronic controller.)

ECONOMY MODELS

SD90	$ 595	−100 to +500
SD90-1	595	−100 to +500
SD100	1055	−100 to +500
SD100-1	1055	−100 to +500
SD15	800	−100 to +500
SD15-1	800	−100 to +500

(The above models feature a control accuracy of ±1°F, except the SD90 and SD90-1, which have ±0.5°F, all using a solid-state controller.)

Those customers wishing to purchase chambers with twist locks, rather than pressure latches, will specify model number by deleting the last zero.

Example: SD60-1 becomes SD6-1, if twist locks are desired.

The SD12, SD14, and SD15 are not available with twist locks.

REPRESENTED BY:

TEST TRAYS AND FIXTURES

PORT TRAYS

Model	Price	Series
TT-4/S	$ 85	TC-2, 4, & 5
TT-8/S	115	TC-6, 7, & 9
TT-15/S	105	TC-15
SD-30/P	125	SD30
SD-30/S	125	SD3
SD-60/P	115	SD60 & SD90
SD-60/S	115	SD6 & SD9
SD-70/P	170	SD70
SD-70/S	170	SD7
SD-80/P	130	SD80 & SD100
SD-80/S	130	SD8 & SD10
SD-12/P	110	SD12 & SD15
SD-14/P	130	SD14

WINDOW TRAYS

TT-4/W	125	TC-2, 4, & 5
TT-8/W	150	TC-6, 8, & 9
TT-15/W	150	TC-15
SD-60/G	150	SD60 & SD90
SD-60/W	150	SD6 & SD9
SD-80/G	190	SD80 & SD100
SD-80/W	190	SD8 & SD10
SD-12/G	165	SD12 & SD15
SD-11/W	155*	SD11

*Price for exchanging customer's blank door or for modifying customer's blank door.

CONNECTOR TRAYS

TT-4/H	130	TC-2, 4, & 5
TT-8/H	150	TC-6, 8, & 9

BLANK TRAYS

TT-4/0	75	TC-2, 4, & 5
TT-8/0	95	TC-8 & 9
TT-15/0	95	TC-15
SD-30/B	100	SD30
SD-30/O	100	SD3
SD-60/B	90	SD60 & SD90
SD-60/O	90	SD6 & SD9
SD-70/B	140	SD70
SD-70/O	140	SD7
SD-80/B	120	SD80 & SD100
SD-80/O	120	SD8 & SD10
SD-12/B	95	SD12 & SD15
SD-14/P	130	SD14
SD-24/0	135	SD24

COMPONENT FIXTURES

(Includes Tray and Switching, 2 Shelves)

CTF-60/R	600	SD30, SD60, & SD90
CTT-60/R	350	SD30, SD60, & SD90
CTS-6/R	125	Tray CTT-60/R

TRANSISTOR FIXTURE

(Includes Tray and Switching)

TTF-60/TR	950	SD30, SD60, & SD90

(In above designations, "B," "P," and "G" indicate doors with pressure latches; "O," "S," and "W" indicate doors with twist locks.)

COMMERCIAL PRODUCTS DIVISION

Accessory Equipment

PRICE LIST

Effective August 1, 1967

Statham® TEST CHAMBERS

MODIFICATIONS FOR SD SERIES CHAMBERS

±0.1°F control accuracy for all models except SD90, SD100, SD11, and SD15	$ 95
Chambers wired for 230 V, 50-cycle operation	60
Rack-mounting for Models SD30, 60, 90, 12, 14, & 15	10
Liquid nitrogen capability (added to CO_2 capability) for Models SD12, 15, 60, 80, 90, & 100	110
Liquid nitrogen capability (in exchange for CO_2 capability) for Models SD12, 15, 60, 80, 90, & 100 (Limited to −100°F cooling)	75
Modification kit for converting SD3, 6, & 9 Chambers and doors to SD30, 60, & 90 (Specify MK-I)	20
Modification kit for converting SD3, 6, & 9 doors only to SD30, 60, & 90 (Specify MK-I-1)	15
Modification kit for converting SD7, 8, & 10 Chambers and doors to SD70, 80, & 100 (Specify MK-II)	20
Modification kit for converting SD7, 8, & 10 doors only to SD70, 80, & 100 (Specify MK-II-2)	15
°C calibration	N/C
Low-pressure CO_2 (300 psi) or high-pressure CO_2 (900 psi) control valves	N/C
Four-foot coolant (CO_2, LN_2) hose assembly, power cord and instruction manual (standard on all test chambers)	N/C

	Model	Price	Description
Cycle-Time Controllers	CTC-2-0, -1	$ 400	2-cycle, continuously adjustable
	CTC-3-1, -2	495	3-cycle, continuously adjustable
	CTC-3-3, -4	550	4-cycle, continuously adjustable
	(For 230 V operation, add $35.)		
Bench Cart	SDC	225	Mobile, accommodates two 50-lb. CO_2 bottles and chamber
Fail-Safe Controls	TFS-1	175	High-temperature fail-safe control
	TFS-2	225	High/low-temperature fail-safe control
	TFS-3	325	High/low-temperature fail-safe control with liquid CO_2 cut-off valve
Rate-Time Programmer	RP11-0	1250	Rate & dwell programming, 4-phase

(Programmer to be used with SD12, 60, & 80 Series "C" version only)

STATHAM INSTRUMENTS, INC.

COMMERCIAL PRODUCTS DIVISION

2221 Statham Boulevard · Oxnard, California 93030 · (805) 486-8302

GENERAL OFFICES

Statham Instruments, Inc. · 12401 West Olympic Boulevard

Los Angeles, California 90064 · (213) 272-0371

August 1967 20M